STUDIES IN BLACKWATER FEVER*

V.—ON THE IMPORTANCE OF FURNISHING POPULATION STATISTICS IN CONNEXION WITH CASES OF BLACKWATER FEVER

BY

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In the various reports which I have read during the last few years on blackwater fever, mainly in British Colonies, statements are met with in regard to the sex, age and race distribution, and other factors which have a bearing on the aetiology of the disease, which from the fact that they are unaccompanied by particular information, more especially population figures, are not capable of satisfactory interpretation. Examples of these incomplete statements follow. I think it will be obvious from the examples I give that owing to their incompleteness they are valueless, but that the additional information required—if it could be given, and I believe it could—would render them valuable, and so help to solve the blackwater problem.

(1) *Sex distribution of Blackwater cases*

(*a*) 'Of the total cases two were females and fifty-six males.'

(*b*) 'Only one of the nineteen (European) cases was a female.'

(*c*) 'Of the seven cases recorded all were males. Six European and one Indian.'

No conclusion is possible, as the relative numbers of males and females is not known.

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* Part I : *Annals of Trop. Med. & Parasitol.*, 1913, p. 479. Part II : *Ibid.*, 1914, p. 639. Part III : *Ibid.*, 1915, p. 201. Part IV : *Ibid.*, 1915, p. 429.

(2) *Age distribution of Blackwater cases*

(*a*) 'There were three children ages 4, 7, and 13.'

(*b*) 'Most of the patients (nine) were between 30 and 40 years.'

No conclusion is possible, as the numbers of people at various age periods are not given. It is stated, however, in one paragraph 'That the age period 30 to 40 years includes a larger number of Europeans than any other, although the age period 20 to 30 years runs it close,' but no data are given in support of this statement.

(*c*) 'A table is given of the age distribution of twenty-one *cases* of blackwater, but this is quite a different matter and does not really help us.

What we want to know is the age distribution of the *population*, then, knowing the ages of a number of cases, we can calculate the distribution for each age group.

(3) *Racial distribution of Blackwater*

(*a*) 'Of the seven cases recorded all were males, six European and one Indian.'

(*b*) 'Sixteen Europeans and one Syrian were attacked.'

(*c*) 'Nineteen cases occurred amongst Europeans, one in a West Indian Negro.'

No conclusion is possible in absence of relative populations.

(4) *Effect of length of residence on liability to Blackwater*

(*a*) 'Thirteen of the cases occurred in those who had served five years or less. This is considerably more than half the total.'

(*b*) 'Length of residence in Africa varies from six weeks to twenty-two years. In four cases it was over ten years.'

No conclusion is possible as to the effect of residence, as we do not know the proportions of those who had served five years or less to those who had served five years or more, and so for the second example.

(5) *Does one attack of Blackwater predispose to another?*

'It is noteworthy that four had previously had one attack of blackwater. In the remaining three it was the first attack.'

Whether one attack predisposes to a second can only be shown if we know the respective numbers of those who have previously had one attack and those who have previously had none.

The information almost always given under this heading, as in this example, is the number of *cases* in each category. We must refer the number of cases to a basis of, say, 100 *people* in each category.

No conclusion is then possible without population data.

(6) *Geographical distribution of Blackwater in Africa*

It would undoubtedly be of value to know if blackwater is more prevalent in one colony than another. In various reports we have the following data : —

	No. of cases	Population		
		Europeans	Asiatic	Miscellaneous
Gold Coast	19	?	?	—
Nyasaland	7	?	?	—
Gambia	0	?	?	—
Uganda	58	823	3,110	—
N. Nigeria	17	?	?	—
S. Nigeria	21	1,065	?	—
S. Leone	10	?	To be given in future	—
E. A. Protectorate ...	15	1,075	?	—

If the populations were given, even though decennial, I think it possible that after a series of years information of value might be deduced. But if the *official population* figures only were given, although the figures would be small, even more accurate conclusions could be drawn, and, of course, the blackwater cases would then have to be classified as (1) Official, (2) Non-official.

(7) *Seasonal distribution and relation to Rainfall or Malaria*
(*a*)

	Table of monthly distribution	Rainfall chart	Malaria statistics
Gold Coast	Not given	Not given	Not given
Nyasaland	Not given	Not given	Not given
Gambia	No cases	Not given	Not given
Uganda	Given	Given	Given
N. Nigeria	Given	Not given	Not given
S. Nigeria	Not given	Given	Not given
S. Leone	Not given	Not given	Not given
E. A. Protectorate	Given	Not given	Not given

(*b*) 'As regards seasonal prevalence, three of these cases (7) occurred during the rains.'

This statement by itself is of practically no value, but if in each colony a table of monthly prevalence were given, after a series of years I think reliable conclusions could be drawn, although the number of cases in each month may not have been corrected for variations in population. At the same time the rainfall should be given, and any figures for malaria that are available. There is a want of uniformity here in the manner in which the data are presented. Nor is it possible always where a seasonal table is *not* given to construct one oneself, for in some of the reports all the cases are not recorded, but merely a summary given.

(8) *Annual variations in case rate*

'It is difficult to account for the marked increase in the number of cases which occurred during 1913.'

It is doubtful from the data supplied if there is 'a marked increase,' but if there were it might simply be due to an increase in the population, but no information is given on this point.

(9) *Annual variations in death rate*

The form in which these are stated is not always correct. For example, with seventeen cases and eight deaths it is, so far as it

goes, correct to say that the mortality is 47·05 per cent., but in the next 100 it might be 39 or 55, or even 15 to 78, and so comparisons made as to the fall or increase in the *annual* death rate will be incorrect unless this range of variation is allowed for.

(10) *Regional distribution*

(*a*) 'In forty-two cases the disease appears to have been contracted in a town or station, and in fourteen in the outlying districts, etc.'

(*b*) 'It will be seen from the chart that thirty-three cases, or more than half, are returned from K. Although this is the largest centre of native and Asiatic population, the proportion is still excessive.'

As the Asiatic and European populations of K. and the other districts mentioned in the chart are not given, it does not appear how this conclusion is reached.

(*c*) 'With reference to locality, five of the cases occurred in the highlands.'

No conclusion as to the regional distribution of the disease is possible in absence of population records of regions compared.

(11) *Occupation*

(*a*) 'Four of the patients were by occupation planters, one a Portuguese officer, etc.'

As we do not know the relative populations of planters, officers, etc., no information of real value is given.

(12) *Cases amongst Officials and Non-officials*

Gold Coast	No statement
Nyasaland	Given
Gambia	No statement
Uganda	No statement
N. Nigeria	No statement
S. Nigeria	Given
S. Leone	No statement
E. A. Protectorate	No statement

There is here no uniformity in the method of presenting the data.

I here append a form that might be used in the compilation o official data. In the case of officials, all particulars are, I believ available, although the number of cases among these will naturall be only a part of the whole; yet less numerous, accurate data fro each locality, which in the course of some years will suffice for th drawing of conclusions, will be of value, whereas more numerous incomplete or inaccurate data will never be of any.

The exact form in which these tables are here drawn up is no essential, but whatever procedure is adopted it should be the sam year after year, and the same in each colony or district.

STATISTICS OF OFFICIALS.*

1. Colony

2. Month	No. of officials	B.W. cases	B.W. deaths
January	—	—	—
February	—	—	—
March	—	—	—
April	—	—	—
May	—	—	—
June	—	—	—
July	—	—	—
August	—	—	—
September	—	—	—
October	—	—	—
November	—	—	—
December	—	—	—
Totals	—	—	—

* Statistics of Official population and other data should be given, even if no case of blackwater occur during the year.

3. African service	No. of officials	B.W. cases	B.W. deaths
Less than ½ year	—	—	—
More than ½ year	—	—	—
More than 1 year	—	—	—
More than 2 years	—	—	—
More than 3 years	—	—	—
More than 4 years	—	—	—
More than 5 years	—	—	—
6-10 years	—	—	—
11-20 years	—	—	—
21 years and upwards	—	—	—
Totals	—	—	—

4. Age period	No. of officials	B.W. cases	B.W. deaths
0-20	—	—	—
21-25	—	—	—
26-30	—	—	—
31-35	—	—	—
36-40	—	—	—
41-45	—	—	—
46-50	—	—	—
51 upwards	—	—	—
Totals	—	—	—

5. Previous attacks of blackwater	No. of officials	B.W. cases	B.W. deaths
0	—	—	—
1	30*	3*	—
2	—	—	—
3	—	—	—
3 or more	—	—	—
Totals	30	3	—

* These three cases are accordingly second attacks, and have occurred among 30 officials, each of whom has previously had one attack.

6. Attacks of malaria during previous six months	No. of officials	B.W. cases	B.W. deaths
0	—	—	—
1-5	—	—	—
6-10	—	—	—
11-20	—	—	—
21-25	—	—	—
25-30	—	—	—
'many'	—	—	—
Totals	—	—	—

7. Quinine Prophylaxis	No. of officials	B.W. cases	B.W. deaths
None	—	—	—
Irregular (grs. — per month) ...	—	—	—
Regular (grs. — per day) ...	—	—	—
Totals	—	—	—

8.	Resident in Station*	No. of officials	B.W. cases	B.W. deaths
	A.	—	—	—
	B.	—	—	—
	C.	—	—	—
	D.	—	—	—
	Totals	—	—	—

* The places selected should be the same every year.

9.	Sex	No. of officials	B.W. cases	B.W. deaths
Males		—	—	—
Females*		—	—	—
Totals		—	—	—

* Wives of officials.

Statistics of Non-Officials

1. Colony

2.	Nationality	Population	B.W. cases	B.W. deaths
Europeans		—	—	—
' Syrian '		—	—	—
E. Indian		—	—	—
W. Indian		—	—	—
Miscellaneous		—	—	—
Totals		—	—	—

3.	Month					B.W. cases	B.W. deaths
January	...	...	...	...	...	—	—
February	...	...	...	...	...	—	—
March	...	...	...	...	...	—	—
April	...	...	...	...	...	—	—
May	...	...	...	...	...	—	—
June	...	...	...	...	...	—	—
July	...	...	...	...	...	—	—
August	...	...	...	...	...	—	—
September		...	...	...	...	—	—
October	...	...	...	...	...	—	—
November ...		...	...	...	...	—	—
December ...		...	...	...	...	—	—
Totals	...	...	...	...		—	—

4.	Month					Rainfall	Cases of malaria
January	...	...	...	...	...	—	—
February	...	...	...	...	...	—	—
March	...	...	...	...	...	—	—
April	...	...	...	...	...	—	—
May	...	...	...	...	...	—	—
June	...	...	...	...	...	—	—
July	...	...	...	...	...	—	—
August	...	...	...	...	...	—	—
September ...		...	...	...	...	—	—
October	...	...	...	...	...	—	—
November ...		...	...	...	...	—	—
December ...		...	...	...	...	—	—

5.	Station	Population*	B.W. cases	B.W. deaths
	A.	—	—	—
	B.	—	—	—
	C.	—	—	—
	D.	—	—	—
	Totals	—	—	—

* For separate nationalities, if available, *net* including the native (African) population.

6.	Age period	Population	B.W. cases	B.W. deaths
	0-20	—	—	—
	21-25	—	—	—
	25-30	—	—	—
	31-35	—	—	—
	35-40	—	—	—
	41-45	—	—	—
	46-50	—	—	—
	51 upwards	—	—	—
	Totals	—	—	—

7.	Sex	Population	B.W. cases	B.W. deaths
Males		—	—	—
Females		—	—	—
Totals		—	—	—

Data as to non-officials are it appears not easily available, if at all, but the ideal to be aimed at is to obtain these 'as well as the official ones. There are many disputed questions concerning black-water fever which should have been settled once for all years ago. It is high time that action should be taken to obtain this information, and an energetic attempt made to get at all the facts about the disease.